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To: Commissioner for Patents for **Examiner Ahshik Kim** **Group Art Unit 2876**	Facsimile No.: **703/872-9306**
From: Lourdes T. Perez Legal Assistant to James O. Skarsten	No. of Pages Including Cover Sheet: **37**

Message:

Enclosed herewith:

- Transmittal Document; and
- Appeal Brief.

Re: Application No. **10/034,065**
Attorney Docket No: **2001-067-TAP**

Date: Tuesday, February 15, 2005

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Mehlberg et al.**

Serial No.: **10/034,065**

Filed: **December 19, 2001**

For: **Barcode Single Laser Scanner Targeting**

§ Group Art Unit: **2876**

§

§ Examiner: **Kim, Ahshik**

§

§ Attorney Docket No.: **2001-067-TAP**

§

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By: Lourdes T. Perez

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Sir:
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- Appeal Brief (37 C.F.R. 41.37).

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Respectfully submitted,

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PATENT

Docket No. 2001-067-TAP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Mehlberg et al.**

Serial No. **10/304,065**

Filed: **December 19, 2001**

For: **Barcode Single Laser Scanner Targeting**

Group Art Unit: **2876**

Examiner: **Kim, Ahshik**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Notice of Appeal, filed in this case on December 22, 2004.

The fees required under § 41.20(B)(2), and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

REAL PARTY IN INTEREST

The real party in interest in this appeal is the following party: Storage Technology Corporation

RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interferences.

STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 1-34

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: 12-14
2. Claims withdrawn from consideration but not canceled: none
3. Claims pending: 1-11 and 15-34
4. Claims allowed: none
5. Claims rejected: 1-11 and 15-34

C. CLAIMS ON APPEAL

The claims on appeal are: 1-11 and 15-34

STATUS OF AMENDMENTS

An Amendment after Final Rejection was not filed. Therefore, Claims 1-11 and 15-34 on appeal herein are as amended in the Response to Office Action filed July 19, 2004.

SUMMARY OF CLAIMED SUBJECT MATTER

A. CLAIM 1 - INDEPENDENT

The subject matter of Claim 1 is directed to a robot comprising a configuration of components disposed to determine the location of a component with respect to a target associated with a library storage cell. This configuration is illustrated in **Figure 6** and described at page 11, line 12 through page 12, line 30, and usefully includes a barcode scan apparatus **602**. The application teaches at page 11, lines 15-16 that scan apparatus **602** is affixed to a robot arm **110**, shown in **Figure 3**. The application teaches at page 13, lines 10-11, that scan apparatus **602** is associated with a scan path **612**. It is further taught, at page 11, lines 17-19 and page 12, lines 1-9, that scan apparatus **602** comprises a laser barcode scan engine **604** and an aperture **606**, having an aperture opening **610**. **Figure 6** shows aperture **606** comprising a number of walls positioned around scan engine **604**, including two wall sections on opposing sides of aperture opening **610**. The inner surfaces of these wall sections attenuate or reduce uncontrolled portions of the scan beam produced by scan engine **604**, to provide scan apparatus **602** with a scan path having a scan width **612**. More particularly, it is taught at page 12, lines 15-19, and shown by **Figure 6**, that these attenuation surfaces of aperture **606** are situated to reduce scan width, so that the scan width **612** is made uniform or non-variable. By making the scan width non-variable, these attenuation surfaces of aperture **606** form a controlled end of scan. Use of the controlled end of scan to determine the position of the robot arm **110** with respect to a target, and to thus determine the location of scan apparatus **602** and the attenuating surfaces of aperture **606**, is described at page 12, lines 20-30.

B. CLAIM 15 - INDEPENDENT

The subject matter of Claim 15 is directed to a positional determination device. Respective components of the Claim 15 device are similar to those of Claim 1. Accordingly, the determination device of Claim 15 is likewise taught in the

application at **Figure 6** and at page 11, lines 12 through page 12, line 30. Thus, the barcode scanner of Claim 15 may compromise scan apparatus **602**, providing a scan path of scan width **612** and affixed to a moveable object such as robot arm **110**. Scan apparatus **602** comprises scan engine **604** and aperture **606**, wherein aperture **606** is provided with surfaces located to attenuate a beam produced by scan engine **604**. At least one end of the scan path **612** resulting from the attenuated beam is thereby controlled by the attenuating surfaces, to form a controlled end of scan, and used to determine location of robot **110** with respect to a target or other external object.

C. CLAIM 16 - INDEPENDENT

The subject matter of Claim 16 is directed to a library storage system comprising a plurality of storage cells, at least some cells including a target, and further compromising a robot. **Figure 3** shows a plurality of tape cartridge storage cells **130**. As described in the application at page 8, lines 4-20, **Figure 3** also shows a number of targets **300** included with a plurality of storage cells **130**. The robot of Claim 16 is taught to include a barcode scanner, an attenuating surface and other features similar to those recited in Claim 1. Accordingly, the robot of Claim 16 is illustrated by **Figure 6** of Applicant's drawings, and described at page 11, line 12 through page 12, line 30 thereof.

D. CLAIM 23 – INDEPENDENT

The subject matter of Claim 23 is directed to a method for determining the position of a robot relative to a target. The application at page 11, lines 12-16, teaches that a barcode scan apparatus **602** can be mounted upon a robot arm **110**, as shown in **Figure 3**. **Figure 3** also shows the robot arm **110** positioned for movement relative to a target **300**. The application at page 12, lines 1-19, together with **Figure 6**, teaches that scan apparatus **602** includes a scan engine **604** that provides a scan path, having a direction parallel to the directions of the robot and a scan width **612**, as shown in **Figure 6**. Scan apparatus **602** further includes an aperture **606** having attenuating surfaces to control the width of the scan path. The application at page 12, lines 22-27, teaches determining a first parallel position at which the target first

becomes readable, and determining a second parallel position at which the target first becomes unreadable.

E. CLAIM 29-INDEPENDENT

The subject matter of Claim 29 is directed to a system for determining the position of a robot relative to a target. The application at page 11, lines 12-16, teaches that a barcode scan apparatus **602** can be mounted upon a robot arm **110**, as shown in **Figure 3**. **Figure 3** also shows the robot arm **110** positioned for movement relative to a target **300**. The application at page 12, lines 1-19, together with **Figure 6**, teaches that scan apparatus **602** includes a scan engine **604** that provides a scan path, having a direction parallel to the directions of the robot and a scan width **612**, as shown in **Figure 6**. Scan apparatus **602** further includes an aperture **606** having attenuating surfaces to control the width of the scan path. **Figure 1** shows robot arm **110** mounted for movement in and movable by a first means, comprising an array **120** described at page 7, lines 4-15. As shown in **Figure 6** and described at page 12, lines 22-27, second and third means for determining first and second parallel positions at which the target first becomes readable and then unreadable, respectively, comprise the left side of target **608**, and the right side thereof.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. GROUND OF REJECTION 1 (Claims 1-10 and 15)

Claims 1-10 and 15 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with enablement requirement.

B. GROUND OF REJECTION 2 (Claims 1-10 and 15)

Claims 1-10 and 15 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention

C. GROUND OF REJECTION 3 (Claims 16, 20-23, 26, and 29)

Claims 16, 20-23, 26 and 29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,138,909, to Rockwell et al.

D. GROUND OF REJECTION 4 (Claims 17-19, 24, 25, 27, 28, and 30-34)

Claims 17-19, 24, 25, 27, 28 and 30-34 are rejected under U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,138,909, to Rockwell et al.

ARGUMENT

A. GROUND OF REJECTION 1 (Claims 1-10 and 15)

In rejecting Applicant's Claim 1 under 35 U.S.C. § 112, first paragraph, the Examiner stated the following:

> Examiner finds phrase "an attenuation surface to the barcode scanner, wherein attenuation surface is located such that at least one end of scan path. . . . ." is difficult to understand to one ordinary skill in the art, and therefore enable to make and/or use of invention.

Final Office Action dated October 5, 2004.

Claim 1 of the above-identified application reads as follows:

1. A robot, the robot comprising:
a barcode scanner with a scan path, wherein the barcode scanner is affixed to the robot;
an attenuation surface affixed to the barcode scanner, wherein the attenuation surface is located such that at least one end of the scan path of the barcode scanner is controlled by the attenuation surface to form a controlled end of scan, and wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to a target associated with at least one storage cell within a storage library.

Applicants consider that it is essential to have the term "attenuation surface" correctly understood, as such term is taught and used in Applicants' specification and claims. In their Response to Office Action mailed July 19, 2004, on page 9 thereof, Applicants stated that "Specifically, with regard to the attenuation surface, the Examiner is referred to page 11, line 26 to page 14, line 2." Applicants reiterate that this section of their application, at page 11, line 26 to page 14, line 2, together with **Figures 6** and **9** discussed therein, most clearly discloses and defines the term "attenuation surface", as used in Claim 1 and other claims of the application.

In making their invention, Applicants sought to provide a cartridge storage library, wherein a barcode laser scanner was used to position a robot arm in accessing storage locations. As taught in the application at page 11, lines 1-11, Applicants recognized that there could be significant benefits in using a barcode scanner for this purpose, such as scan engine **604** shown in **Figure 6**. However, Applicants also

recognized that a barcode scan engine by itself would produce a scan beam having a width that was variable, or uncontrolled. At page 12, lines 9-15, the application states the following:

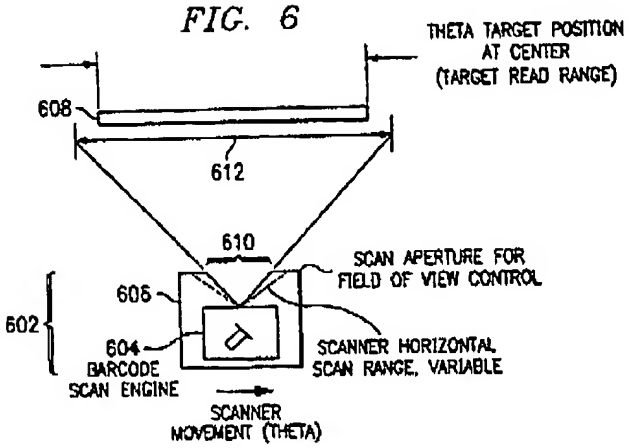
> The flexture is a mechanical apparatus within the barcode scan engine that controls the movement of the mirror that reflects the laser light across an area. Since the flexture is mechanical, the movement of the robotic arm **110** during the calibration procedure will affect the flexture causing the scan width **612** to be variable.

The application further teaches, at page 12, lines 1-14, that variable or uncontrolled width of the scan beam creates a serious problem in using a barcode scanner for Applicants' purpose:

> Furthermore, the scan width of the laser scanner beam from the barcode laser scanner is not controlled. Therefore, the proper calibration measurements cannot be made.

In accordance with their invention, Applicants solved this problem as taught in their application at page 12, lines 4-9 and 15-19, and in **Figure 6** of their drawings, reproduced below. More particularly, Applicants contain or substantially enclose the laser barcode scan engine **604** in an aperture **606**, having an aperture opening **610**. The aperture opening **610** is sized to be selectively smaller than the width of the laser light beam produced by the scan engine **604**. As a result, the portion of the beam that passes outward through aperture opening **610**, for use in scanning a target **608**, has a scan width **612** that is uniform, or non-variable.

FIG. 6



Referring further to **Figure 6**, there is shown aperture **606** compromising a number of walls positioned around scan engine **604**, including two wall sections positioned on opposing or opposite sides of aperture opening **610**. The inner surfaces of the two wall sections absorb, or otherwise attenuate or reduce the uncontrolled portion of the scan beam produced by scan engine **604**, in order to provide a scan path or scan width element **612** of non-variable width. **Figure 6** shows each of these attenuated uncontrolled beam portions depicted as a dashed line, directed from scan engine **604** to one of the inner surfaces of aperture **606**. One of these dashed lines is labeled "SCANNER HORIZONTAL SCAN RANGE, VARIABLE".

Thus, each of these inner surfaces, of the two wall sections of aperture **606** adjacent to opening **610**, compromises an attenuation surface. Moreover, it is to be emphasized that each of these attenuation surfaces discloses the attenuation surface recited in Claim 1 and other claims of the application. Finally, it is to be emphasized that these attenuation surfaces perform an essential function in achieving the purpose of Applicants' invention. At page 12, lines 18-19, after describing the function of the aperture in reducing scan width, which is achieved by means of the attenuation surfaces as described above, the following is stated:

This produces a non-variable scan-width giving a controlled end of scan.

A further embodiment of the invention is disclosed at page 13, lines 18-30 of the application, together with **Figure 9** reproduced below. **Figure 9** depicts aperture **606** having two wall sections, above and below the aperture opening, respectively. The upper wall section is specifically referenced as "**606**". In this embodiment, the attenuation surfaces of the aperture wall sections are the sides of the wall sections that are oriented toward scan engine **604**, that is, the left sides of the wall sections as viewed in **Figure 9**.

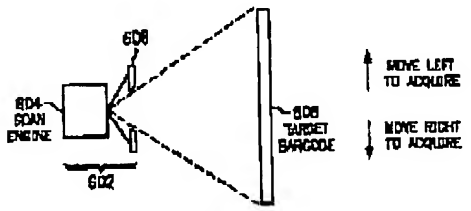


FIG. 9

At page 13, lines 23-27, it is taught that the surface of aperture **606** should be provided with a black anodized or black matt powder coating. It will be readily apparent that if the leftward surfaces of aperture **606** shown in **Figure 9** were provided with such black coating, such surfaces would be made particularly effective in absorbing, scattering or otherwise attenuating portions of the laser light scan beam produced by scan engine **604**. It is noted that original Claim 9 specifically recites a black anodized attenuation surface.

As stated above, the application teaches that the attenuation surfaces of aperture **606** operate to produce a non-variable scan width **612**, and thereby provide a controlled end of scan. At page 12, lines 20-30, together with **Figure 6**, the application teaches how the controlled end of scan, or non-variable scan width, is used to determine a location of the attenuation surfaces, and also the barcode scanner, with respect to the target **608**. Such section of the application states the following:

To determine the center of the target in the direction parallel to the scan path, the robotic arm **110** is moved in the direction of scan path until the target **608** first becomes readable. This position is recorded through the use of a positional encoding

device. The robotic arm **110** continues to move in the same direction until the target is no longer readable by the barcode scanner apparatus **602**. This position is also recorded. The center of the target in the scan path direction is then the half distance position between these two positions.

Figure 6 shows a barcode scanner **602**, comprising scan engine **604** and aperture **606** with its attenuation surfaces, disposed to move rightward as viewed in **Figure 6**. As scanner **602** moves to the right, the scan width element **612** generated thereby is able to read target **608**. It is assumed that scanner **602** with its respective components is affixed to robotic arm **110** for movement therewith. Initially, robotic arm **110** and scanner **602** are positioned so that the right end of scan width element **612** is to the left of the left end of target **608**. Scanner **602** is then moved to the right along its path. When the right end of element **612** reaches the left end of target **608**, the target becomes readable, and this position is recorded. Then, when the left end of element **612** moves past the right end of target **608**, the target becomes unreadable, and this position is also recorded. Because the width of the scan element **612** is non-variable, these two positions can be used to determine the location of the robotic arm, and thus the position of scan apparatus **602** and the location of the attenuation surfaces of aperture **606**.

In view of the above, Applicants consider that their specification, together with the application drawings, provides sufficiently clear and detailed information to enable those of skill in the art to readily make and use Applicants' invention, as recited by their Claim 1 and other claims of their application.

In the Final Office Action, the Examiner apparently rejected Claims 1-10 and 15 under 35 U.S.C. § 112, first paragraph, because of certain language in Applications' Abstract and Summary of the Invention. The Final Office Action stated:

> In abstract (lines 8-10), it is stated "In one embodiment, the robotic apparatus includes a barcode scanner having a scan path and an attenuation surface within the scanner path." Attenuation surface within the scanner scan path clearly describes that the attenuation surface is a part of the target, not part of the scanner (see claim 16, 29 etc.). However, claims 1 and 15 are written as if attenuation surface is part of the scanner "an attenuation surface affixed to the bar code scanner".

Final Office Action dated October 5, 2004, page 3

> Examiner respectfully submits that context of "attenuation surface" in the summary of invention is that attenuation surface is within the scanner scan path. Relying on **Figure 3**, the scanner appears to be a part of the camera system **360**, and the calibration target is **300** affixed to a surface. Accordingly, it can not be contemplated "an attenuation surface affixed to the barcode scanner" in implementing what is claimed.

Final Office Action dated October 5, 2004

The language at issue in the above statements from the Final Office Action is apparently the statement "a barcode scanner with a scan path and an attenuation surface within the scanner scan path", at page 4, lines 7-8 of the application, and the statement "a barcode scanner having a scan path and an attenuation surface within the scanner scan path", at page 23, lines 9-10. Applicants consider that both these statements are consistent with and support the term "attenuation surface", as used in Applicants' Claim 1 and 15, and as defined above and described in Applicants' specification. Clearly, the barcode scanner of Applicants' invention will be within, or will move within a "scanner scan path", as the barcode scanner is moved by robotic arm **110** or the like as a scan is being conducted. As described above, the barcode scanner has an associated scan path such as a scan width element **612**, and also has an attenuation surface affixed to it. Thus, if the barcode scanner is within the scanner scan path, the attenuation surface that is affixed to the scanner, and is in fact an essential part thereof, will also be within the scanner scan path.

For at least all the above reasons, Applicants consider the specification of their application to be fully enabling, as required by 35 U.S.C. § 112, first paragraph, in regard to their Claim1.

Independent Claim 15 is directed to subject matter similar to that recited in Claim 1. Accordingly, Applicants consider their specification to be fully enabling in regard to Claim 15, for the same reasons given in support for Claim 1.

Claims 2-10 apparently were rejected under 35 U.S.C. § 112, first paragraph only as being respectively dependent on Claim 1. Accordingly, Applicants consider their specification to be fully enabling in regard to Claims 2-10, for the same reasons

given in support for Claim 1.

Therefore, it is believed that Applicants' specification is fully enabling, as required by 35 U.S.C. §112, first paragraph, in regard to each of the Claims 1-10 and 15. Accordingly, it is respectively requested that the Board reverse the Examiner's final rejection of those claims that is based on lack of enablement.

B. GROUND OF REJECTION 2 (Claims 1-10 and 15)

The Final Office Action rejects claims 1-10 and 15 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which Applicants regard as their invention. As to Claim 1, the Final Office Action states:

> Re claim 1, line 3: "an attenuation surface affixed to the barcode scanner," would be incomprehensible to implement in that the attenuation surface reflect lights from a scanner illumination source (see claim 4). Claim 15 is rejected on the same ground.

Final Office Action dated October 5, 2004, page3.

This rejection is improper, since the rejection amounts to a question about how the invention operates rather than a showing of any indefiniteness of the claims. As far as any indefiniteness, the Office Action fails to show where any feature recited in the claims is recited indefinitely. Applicants have clearly set forth what Applicants believe to be the invention.

In this rejection, the Final Office Action appears to be concerned with the reflection of light from the attenuation surface. In fact, Applicants' specification emphasizes that Applicants were well aware of this matter. Moreover, it is clear that Applicants have taken measures to ensure that light reflection from the attenuating surface poses no difficulty. The application, at page 13, line 18 to page 14, line 2, states the following:

> With reference now to **Figure 9**, a diagram depicting more detail about the aperture associated with the barcode scan apparatus is depicted in accordance with the present invention. As depicted, the aperture **606** opening is beveled to ensure that specular reflections are not sent back into the scanner **604**.

> Furthermore, the aperture should be black anodized (i.e., black matt with powder coating that spreads or scatters light) to further ensure that specular scattering does not result in light being reflected back into the scanner **604** from the aperture. In some embodiments, the aperture is constructed from metal. However, other materials may be utilized. The sharper the bevel, the less likelihood of specular reflections being sent back into the scanner **604**.

The above teachings of Applicants indicate the following provisions taken to prevent specular reflections from affecting the scanner: (1) The edges of the aperture wall adjacent to aperture opening **610** are beveled. (2) The aperture **606**, thereby including the attenuation surfaces thereof and all other internal surfaces, are black anodized, that is, are covered by black matt with a powder coating that spreads or scatters light. (3) Aperture **606** is constructed from metal, to allow sharp bevels to be formed therein. Claims 2, 3, 8, and 9 are all specifically directed to these features.

It is readily apparent that the attenuation surface may certainly be permitted to reflect light to directions other than into the scanner, as long as the light reflected by the attenuation surface does not reflect back into the scanner, or some other correction is performed for light that is reflected back into the scanner. Such reflected light clearly would not be detrimental to Applicants' scanner. Applicants, in fact, acknowledge such non-detrimental light in the recitation of Claim 4.

At least for all the above reasons, Applicants believe that all the Claims 1-10 and 15 particularly point out and distinctly claim the subject matter which Applicants regard as their invention, and such claims are not indefinite. Accordingly, it is respectfully requested that the Board reverse the final rejection of those claims that is based on indefiniteness.

C. GROUND OF REJECTION 3 (Claims 16, 20-23, 26 and 29)

The Final Office Action rejects Claims 16, 20-23, 26 and 29 under 35 U.S.C. § 102 (b) as being anticipated by (U.S. Patent No. 6,138,909) to Rockwell et al.

As to Claims 16, 20, 22, 23, 26 and 29, the Final Office Action states:

> Re claims 16, 20, 22, 23, 26 and 29, Rockwell teaches a robot (see figure 1;col. 1, lines 26+) comprising a gripper 22, a barcode 28 affixed to the data cartridge processor 14 (col. 2, lines 35+), wherein the positional parameters are retrieved from the barcode (col. 3, lines 35+). Since barcode is affixed on the

surface of the cartridge processor 14, it can be said that the surface contributes in determining the scan path.

Final Office Action dated October 5, 2004, page 4.

C1. Claims 16 and 20-22

Independent Claim 16 reads as follows:

> 16. A library storage system, the system comprising:
> a plurality of storage cells, wherein at least some of the plurality of storage cells include a target;
> a robot for moving items to and from the storage cells, wherein the robot includes a barcode scanner with a scan path, an attenuation surface, wherein the attenuation surface is located such that at least one end of the scan path is controlled by the attenuation surface to form a controlled end of scan, wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to the target. (Emphasis added)

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re bond*, 910 F .2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed Cir. 1990). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 21 U.S.P.Q.2d 1031, 1034 (Fed Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. Kalman v. Kimberly-Clark Corp., 713 F .2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983). Applicants respectfully submit that Rockwell does not teach every element of the claimed invention arranged as they are in Claim 16. Specifically, Rockwell does not teach an attenuation surface included in a robot, wherein the robot also includes a barcode scanner, the attenuation surface is located such that at least one end of a scan path of the barcode scanner is controlled by the attenuation surface to form a controlled end of scan, and wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to a target included with a plurality of storage cells.

According to its Abstract, Rockwell teaches a media handling system that

includes a data cartridge processor having an opening to receive a data cartridge. The data cartridge processor functions to read data from or record data to the data cartridge. The system also includes a gripper for inserting the data cartridge into the opening and an actuator to effect movement of the gripper. A code symbol is affixed to the data cartridge processor and a code reader is associated with the gripper to read the code symbol for locating the opening of the data cartridge processor.

The Office Action alleges that Rockwell teaches the features of Claim 16 in **Figure 1**, which is shown below:

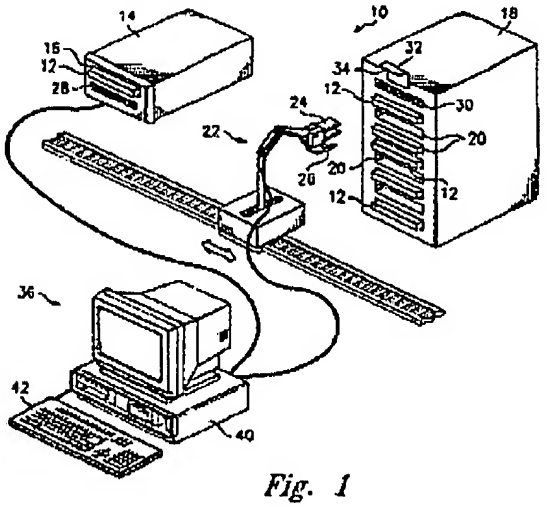


Fig. 1

In **Figure 1**, Rockwell teaches a gripper **22** to which fingers **24** and code reader **26** are affixed. The gripper 22 is provided to move cartridges between a processor 14 and a storage rack 18. However, Rockwell does not teach an attenuation surface that is included in a robot for moving items to and from storage cells, wherein the robot also includes a barcode scanner with a scan path. The gripper **22** in **Figure 1** does not have any attenuation surface affixed to or included in it. Rockwell, in fact, does not teach anything about an attenuation surface included in a robot, let alone an attenuation surface that is located such that at least one end of a scan path is controlled by the attenuation surface. While the Examiner may have interpreted the path between data cartridge processor **14** and storage rack **18** as a scan path, Rockwell still does not teach an attenuation surface that is located such that at least one end of

the scan path is controlled by the attenuation surface.

To the contrary, at column 1, lines 21-34, Rockwell teaches a system controller **36** having an output for controlling an actuator **38**. The system controller **36** comprises computers, workstation, mini-computer, mainframe or other computing device **40**. Thus, the nature of the mechanism that controls the scan path in Rockwell is different from the presently claimed invention, in that Rockwell uses a system controller **36**, which is a computing device, to control the movement of gripper **22**. In the presently claimed invention, the attenuation surface forms a controlled end of scan that cuts off at least one end of the scan path in order to control it. There is simply no attenuation surface in Rockwell that controls the at least one end of the scan path. In other words, Rockwell uses a computer to control the movement of the gripper (which the Office Action equates with a scan path) and the presently claimed invention uses a physical blockage, i.e., the attenuation surface, to cut off or control an end of a scan path.

The Office Action also alleges that Rockwell teaches the features of Claim 16, at column 1, lines 26+, column 2, lines 35+, and column 3, lines 35+. Rockwell, col. 3, line 35 through col. 4, line 7, reads as follows:

> Referring to **FIG. 3**, the media handling system **10** determines offset distances **44** and **45** between the code reader **26** and the fingers **24** with respect to where the code reader **26** is reading. The distances **44** and **45** are determined using one of the code symbols **28** and **30** and the touch stop **34**. For example, the code symbol **28** is affixed to the data cartridge processor **14** so that an edge **46** of the code symbol **28** is located known distances **48** and **49** from edges **50** and **51**, respectively, of the touch stop **34**. The distances **48** and **49** are stored in the memory of the computing device **40** of the system controller **36** through the operator keyboard **42**. Using the fingers **24**, the gripper **22** locates the edges **50** and **51** of the touch stop **34** and stores the location of edges **50** and **51** in the memory of the computing device **40**. Additionally, the code reader **26** scans or reads the code symbol **28** and stores the location of the edge **46** of the code symbol **28** in the memory of the computing device **40**. The system controller **36** calculates the distance **44** and **45** using the measured distances between the edge **46** and the edges **50** and **51** as determined using the code reader **26** and the fingers **24** and the known distances **48** and **49** stored in the memory of the computing device **40**. Thus, the media handling system **10** accurately position the fingers **24** of the gripper **22** using the code reader.
>
> Once the distances **44** and **45** between the code reader **26** and the

fingers **24** are determined, the system controller **36** accurately locates each data cartridge processor **14** and storage rack **18** in the media handling system **10** using the code reader **26**. For example, the code system **28** is affixed to the data cartridge processor **14** so that the edge **46** of the code system **28** is located a predetermined distance from the opening **16**. This predetermined distance is stored in the memory of the computing device **40** of the system controller **24** through the operator keyboard **42**. By locating the edge **46** of the code symbol **28**, distances **44** and **45** are used to accurately align the fingers 24 with the opening **16** of the data cartridge processor **14**. Additionally, each compartment **20** of the storage rack **18** will be accurately located in the similar manner using code symbol **30**.

Figure 3 of Rockwell is shown below:

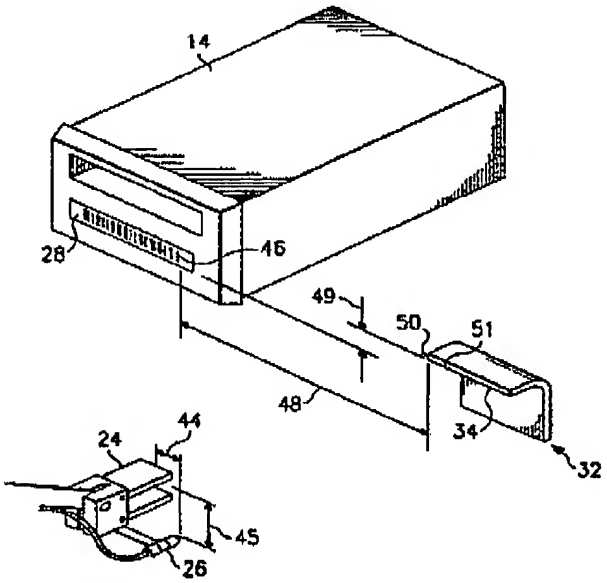


Fig. 3

Rockwell does not teach a controlled end of scan that is used to determine a location of the attenuation surface with respect to a target included with one or more storage cells. Since Rockwell does not teach an attenuation surface, Rockwell does not and would not teach determining the location of the attenuation surface with respect to a target. While Rockwell teaches measuring distances relative to edges **50** and **51**, these edges do not serve the function of an attenuation surface such as the attenuation surface recited in amended claim 1. To the contrary, in the above section, Rockwell teaches determining the location of edges **50** and **51** of touch stop **34** with

respect to edge 46 of code symbol 28, not a location of an attenuation surface with respect to a target. The touch stop 34 clearly is not an attenuation surface, nor is it included in a moveable robot. In addition, the touch stop does not cut off at least one end of the scan path. The touch stop is only used as a reference in Rockwell to measure the distances. The touch stop does not form a controlled end of scan for the gripper 22. Therefore, Rockwell does not teach the same features as recited in amended Claim 16.

The code symbol 28 mounted on cartridge processor 14 is not an attenuation surface. Moreover, the barcode is not mounted on or included in a moveable robot, but is affixed to an immoveable object. Rockwell, at col. 2, lines 60-61 refers to the gripper 22, not cartridge processor 14, as a robotic mechanism.

C2. Claims 23, 26 and 29

Independent claim 23, which is representative of independent claim 29 with regard to similarly recited subject matter, reads as follows:

> 23. A method for determining the position of a robot relative to a target, the method comprising:
> moving a robot, having a barcode scan engine with a scan path having a scan path width controlled by an attenuation surface, in a direction substantially parallel to the scan path;
> determining a first parallel position at which the target is first readable by the barcode scan engine; and
> determining a second parallel position at which the target first becomes unreadable by the barcode scan engine. (emphasis added)

Rockwell does not teach a robot having a barcode scan engine with a scan path having a scan path width controlled by an attenuation surface. As described above, Rockwell does not teach an attenuation surface, let alone a scan path having a scan path width that is controlled by such an attenuation surface. In addition, Rockwell does not teach determining a second parallel position at which the target first becomes unreadable by the barcode scan engine.

The Office Action alleges that these features are taught at column 3, lines 35 to 57. In this section, Rockwell teaches measuring distance 48 by locating edge 46 of code symbol 28 and edge 50 of touch stop 34. Distance 48 between these two edges is

parallel to the movement of the gripper **22**. Edge **46** is only one end of code symbol **28**. Therefore, Rockwell only teaches determining a first parallel location of code symbol **28**. Rockwell does not determine a second parallel location of code symbol **28**. Therefore, Rockwell fails to teach the feature of determining a second parallel position at which the target first becomes unreadable by the barcode scan engine, as recited in Claim 23.

Claim 29 is directed to subject matter similar to that of Claim 23, and is considered to distinguish over Rockwell for the same reasons given in support thereof.

For at least all of the above reasons, Applicants respectfully submit that Rockwell does not teach or suggest all of the features of Claims 16, 23 and 29. At least by virtue of their dependency on Claims 16 and 23, respectively, Rockwell does not teach or suggest the features of dependent Claims 20-22 and 26. Accordingly, it is respectfully requested that the Board reverse the Examiner's final rejection of those claims.

D. GROUND FOR REJECTION 4 (Claims 17-19, 24, 25, 27, 28 and 30-34)

D1. Claims 17-19

Regarding Claims 17-19, the Final Office Action states:

> Claims 17-19, the material used in manufacturing the storage rack **18** can be used to make the rack comprising sharp edges – In fact, border area of each tray compartment **20** create sharp edges. Although Rockwell does not explicitly suggest that the surface is beveled, such feature is a design consideration. One ordinary skill in the art would choose to design the surface however he/she wants as long as the barcode can be applied and functions as intended.

Final Office Action dated July 19, 2004, page 5

As described in previous arguments for Claims 16, 23 and 29, Rockwell does not teach an attenuation surface, either to form a controlled end of scan, or for any other purpose. Therefore, Rockwell cannot teach or suggest that at least one of the edges of an attenuation surface is beveled (Claim 17), that the attenuation surface is constructed from material formable into sharp edges (Claim 18), or that the attenuation surface is configured to reflect a scanner illumination source in a non-

detrimental manner (Claim 19).

The Final Office Action alleges that the material used to manufacture the storage rack may be used to make a rack that comprises sharp edges. However, the storage rack **18** of Rockwell has nothing to do with an attenuation surface to form a controlled end of scan. At column 2, lines 35-45, the storage rack **18** of Rockwell is disclosed to be merely a plurality of storage trays that holds or stores a number of data cartridges. The storage rack **18** is not an attenuation surface. Since there is no teaching or suggestion of an attenuation surface, a person of ordinary skill in the art would not be led to modify the storage rack of Rockwell to construct an attenuation surface from material formable into sharp edges, as recited in Claim 18.

The Final Office Action also states that although Rockwell does not explicitly teach that the surface is beveled, such a feature is a design consideration and that one of ordinary skill in the art would choose to design the surface however he/she wants as long as the barcode can be applied and functions as intended. Applicants respectfully disagree.

There is no teaching or suggestion of an attenuation surface in Rockwell. In addition, as described on page 13, lines 18-30 of the current specification, the attenuation surface is beveled to ensure that specular reflections are not sent back into the scanner. The beveled attenuation surface is not merely a design choice. Therefore, a person of ordinary skill in the art would not choose to add an attenuation surface to the system of Rockwell and design the attenuation surface to be beveled, unless having first had benefit of Applicants' disclosure.

D2. Claims 24, 25, 27, 28 and 30-34

Regarding Claims 24, 25, 27, 28 and 30-34, the Final Office Action states:

> Re. claims 24, 25, 27, 28, and 30-34, as shown in figure 3, the robot retrieves/deposits a data cartridge relying on positioning the device according to offset value 44, and 45 from the (col. 3, lines 35+). Location of the left edge 46 is stored along with the barcode information (col. 3, lines 49+). Although not explicitly suggested, it is obvious to one ordinary skill in the art to store location of right edge, or calculate center/mid point using locations of right and left edges.

detrimental manner (Claim 19).

The Final Office Action alleges that the material used to manufacture the storage rack may be used to make a rack that comprises sharp edges. However, the storage rack 18 of Rockwell has nothing to do with an attenuation surface to form a controlled end of scan. At column 2, lines 35-45, the storage rack 18 of Rockwell is disclosed to be merely a plurality of storage trays that holds or stores a number of data cartridges. The storage rack 18 is not an attenuation surface. Since there is no teaching or suggestion of an attenuation surface, a person of ordinary skill in the art would not be led to modify the storage rack of Rockwell to construct an attenuation surface from material formable into sharp edges, as recited in Claim 18.

The Final Office Action also states that although Rockwell does not explicitly teach that the surface is beveled, such a feature is a design consideration and that one of ordinary skill in the art would choose to design the surface however he/she wants as long as the barcode can be applied and functions as intended. Applicants respectfully disagree.

There is no teaching or suggestion of an attenuation surface in Rockwell. In addition, as described on page 13, lines 18-30 of the current specification, the attenuation surface is beveled to ensure that specular reflections are not sent back into the scanner. The beveled attenuation surface is not merely a design choice. Therefore, a person of ordinary skill in the art would not choose to add an attenuation surface to the system of Rockwell and design the attenuation surface to be beveled, unless having first had benefit of Applicants' disclosure.

D2. Claims 24, 25, 27, 28 and 30-34

Regarding Claims 24, 25, 27, 28 and 30-34, the Final Office Action states:

> Re. claims 24, 25, 27, 28, and 30-34, as shown in figure 3, the robot retrieves/deposits a data cartridge relying on positioning the device according to offset value 44, and 45 from the (col. 3, lines 35+). Location of the left edge 46 is stored along with the barcode information (col. 3, lines 49+). Although not explicitly suggested, it is obvious to one ordinary skill in the art to store location of right edge, or calculate center/mid point using locations of right and left edges.

Final Office Action dated October 5, 2004

While Rockwell teaches determining the location of one edge of a code symbol, Rockwell does not teach or suggest determining the center of the target in the parallel direction (Claims 24, 30), assigning a position halfway between first and second parallel positions as the center position of the target in the parallel direction (Claims 25, 31), determining the center of the target in the perpendicular direction from the first and second perpendicular positions (Claims 27, 33), or assigning the midpoint between the first and second perpendicular positions as the center of the target in the perpendicular direction (Claims 28, 34).

As described in previous arguments presented for claims 23 and 29, Rockwell does not teach or suggest determining the location of a second parallel location of the target. It would not have been obvious to one of ordinary skill in the art to determine the center of the target by assigning a position halfway between first and second positions, because without first determining the location of the second edge of the target, the center or midpoint of the target may not be determined.

In addition, a person of ordinary skill in the art would not have been motivated by Rockwell to determine the location of the second edge, since Rockwell is only concerned with using one edge of the code symbol to measure the distance between the code symbol and the touch stop. Rockwell is not concerned with determining the center or midpoint of the code symbol. Therefore, a person of ordinary skill in the art would not be motivated to determine the location of the second edge of the code symbol in order to determine the center of the target, without the disclosure of the Applicants.

For at least all the above reasons, Claims 17-19, 24, 25, 27, 28 and 30-34 are respectively considered to distinguish over the Rockwell patent. Accordingly, it is respectfully requested that the Board reverse the Examiner's final rejection of those claims.

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CLAIMS APPENDIX

The text of the claims involved in the appeal are:

1. A robot, the robot comprising:

a barcode scanner with a scan path, wherein the barcode scanner is affixed to the robot;

an attenuation surface affixed to the barcode scanner, wherein the attenuation surface is located such that at least one end of the scan path of the barcode scanner is controlled by the attenuation surface to form a controlled end of scan, and wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to a target associated with at least one storage cell within a storage library.

2. The robot as recited in claim 1, wherein the attenuation surface comprises a plurality of edges and wherein at least one of the edges are beveled.

3. The robot as recited in claim 1, wherein the attenuation surface is constructed from a material that is formable into sharp edges.

4. The robot as recited in claim 1, wherein the attenuation surface reflects light from a scanner illumination source in a non-detrimental manner.

5. The robot as recited in claim 1, wherein the attenuation surface controls one or more ends of the scan path during movement of the robot parallel to the scan path in

order to determine a target position in a first coordinate frame.

6. The robot as recited in claim 1, wherein the movement of the barcode scanner substantially orthogonal to the scan path will determine the target position relative to positional data from the robot in a second coordinate frame.

7. The robot as recited in claim 1, wherein the target is a barcode.

8. The robot as recited in claim 1, wherein the attenuation surface comprises a metal.

9. The robot as recited in claim 1, wherein the attenuation surface is black anodized.

10. The robot as recited in claim 1, wherein the barcode scanner is a laser scanner.

11. The robot as recited in claim 10, wherein the laser scanner comprises:

a laser; and

a moveable reflecting surface which reflects light from the laser to an object external to the laser scanner.

15. A positional determination device, the device comprising:

a barcode scanner with a scan path affixed to a moveable object;

an attenuation surface affixed to the barcode scanner, wherein the attenuation surface is located such that at least one end of the scan path is controlled by the attenuation surface to form a controlled end of scan, wherein the controlled end of scan is used to determine a location of the object with respect to an external object.

16. A library storage system, the system comprising:

a plurality of storage cells, wherein at least some of the plurality of storage cells include a target;

a robot for moving items to and from the storage cells, wherein the robot includes a barcode scanner with a scan path, an attenuation surface, wherein the attenuation surface is located such that at least one end of the scan path is controlled by the attenuation surface to form a controlled end of scan, wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to the target.

17. The library storage system as recited in claim 16, wherein at least one of the edges of the attenuation surface is beveled.

18. The library storage system as recited in claim 16, wherein the attenuation surface is constructed from a material that is formable into sharp edges.

19. The library storage system as recited in claim 16, wherein the attenuation surface is configured to reflect a scanner illumination source in a non-detrimental

manner.

20. The library storage system as recited in claim 16, wherein the attenuation surface controls at least one end of the scan path during movement of he robot parallel to the scan path to determine target position in a first coordinate frame.

21. The library storage system as recited in claim 16, wherein the movement of the barcode scanner substantially orthogonal to the scan path determines the target position relative to positional data from the robot in a second coordinate frame.

22. The library storage system as recited in claim 16, wherein the target is a barcode.

23. A method for determining the position of a robot relative to a target, the method comprising:

moving a robot, having a barcode scan engine with a scan path having a scan path width controlled by an attenuation surface, in a direction substantially parallel to the scan path;

determining a first parallel position at which the target is first readable by the barcode scan engine; and

determining a second parallel position at which the target first becomes unreadable by the barcode scan engine.

24. The method as recited in claim 23, further comprising:

determining the center of the target in the parallel direction from the first and second parallel positions.

25. The method as recited in claim 24, wherein the step of determining the center of the target in the parallel direction comprises assigning a position halfway between the first and second parallel positions as the center position of the target in the parallel direction.

26. The method as recited in claim 23, further comprising:

moving the robot in a direction substantially perpendicular to the scan path;

determining a first perpendicular position at which the target first becomes readable to the barcode scanner; and

determining a second perpendicular position at which the target first becomes unreadable by the barcode scanner.

27. The method as recited in claim 26, further comprising:

determining the center of the target in the perpendicular direction from the first and second perpendicular positions.

28. The method as recited in claim 27, wherein the step of determining the center of the target in the perpendicular direction comprises assigning the midpoint between the first and second perpendicular positions as the center of the target in the perpendicular direction.

29. A system for determining the position of a robot relative to a target, the system comprising:

first means for moving a robot, having a barcode scan engine with a scan path having a scan path width controlled by an attenuation surface, in a direction substantially parallel to the scan path;

second means for determining a first parallel position at which the target is first readable by the barcode scan engine; and

third means for determining a second parallel position at which the target first becomes unreadable by the barcode scan engine.

30. The system as recited in claim 29, further comprising:

fourth means for determining the center of the target in the parallel direction from the first and second parallel positions.

31. The system as recited in claim 30, wherein the fourth means comprises assigning a position halfway between the first and second parallel positions as the center position of the target in the parallel direction.

32. The system as recited in claim 29, further comprising:

fourth means for translating the robot in a direction substantially perpendicular the scan path;

fifth means for determining a first perpendicular position at which the target first becomes readable to the barcode scanner; and

sixth means for determining a second perpendicular position at which the target first becomes unreadable by the barcode scanner.

33. The system as recited in claim 32, further comprising:

seventh means for determining the center of the target in the perpendicular direction from the first and second perpendicular positions.

34. The system as recited in claim 33, wherein the seventh means comprises assigning the midpoint between the first and second perpendicular positions as the center of the target in the perpendicular direction.

EVIDENCE APPENDIX

There is no evidence to be presented.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.